Notebook, PN-10-05-01

This pocket notebook was used by Edison during 1910 for notes regarding experimental work and other tasks to be performed. Many of the entries relate to proposed applications for Edison's alkaline storage battery and to the marketing, sale, and performance of cells. Included are reports of road tests made with electric vehicles; statistics on the cost and efficiency of electric traction and on the use of electric trucks in New York City; notes on battery shipments, production costs, and related assets; and descriptions of experimental work on phonograph reproducers, recording methods, and cabinets. There are also entries pertaining to the hiring of Converse D. Marsh to promote the battery and Sydney W. Ashe to research its use in locomotives; a reminder to contact J. P. Morgan, Jr., or George W. Perkins about approaching the Southern Railway Co. for battery business; and occasional notations about cement, phonograph sales, and various advertising ideas. Among the employees mentioned in relation to individual tasks are John R. Anderson, Jr., Ralph Arbogast, Robert A. Bachman, Frank L. Dyer, Walter E. Holland, and Carl H. Wilson. The pages are unnumbered. Approximately 75 pages have been used.

PN-10-05-01

☆2996

C.B. Keese

Naval Elec

Computer

Anderson put carriage out on trial where you have Garrage —

See Taxicab people get depew —

3½ Ton wear that is equal to 168 vehicles both sides of 84 on a side, it makes 600 Rev daily — equals 100800 vehicles one day if vehicles 1 every 50 ft of street at 8 miles hour - 888 vehicles pass every hour at in 10 hours 8880 vehicles per day 1/12th of 1 days tests hence One day on test wheels Equals 12 days of a street, 26 days equals 1 year —

figure out minimum unit
Cement pavement for
Canada —

RR Notes.

Tractive res level, medium heavy trains best condition 17 lbs average Central London Tubes 113 Ton train 7 cars 20 lbs starting has been conditions where 40 lbs on 26 Ton train rare

Tractive res Zossen Test 83 Ton 75 ft car
35 M hour 7.75 lbs per Ton 40 M hour
10 lbs 50 miles 13½ 60 miles 18½ lbs
increase almost all due to wind res
wind res almost same for one car as several its a function of the end + front

In all tests there seems to be a constant figure of 6 lbs per ton mile to pull + a figure for head + tail wind res depending on speed – Wind res only becomes of importance after speed of 30 miles, smooth sides + rounded ends greatly diminish it

Power lost on curves 390 ft radius
11 @ 15 lbs per ton extra

Investment in plant + transmission system approx proportional to weight of cars

gravity 22 lbs pull per ton for one per cent grade

Closed Trolley longitudl seats dead weight per passgr seated 600 @ 700 lbs
Cross seats 1000 @ 1200

Average paying load fully loaded 15 @ 20% of weight average of day load 8 @ 10%

40 miles hour 50 Ton train 80 KW
100 Ton train 140 KW
200 Ton train 200 KW

Long distance high speed train should for efficiency be composed of many coaches weight being a secondary considtn. on other hand for frequently stopping low speed trains should be built light but whether of few or many coaches is of small importance as far as efficiency is concerned

Acceleration - Tracting force 1 mile per hour per second is 100 lbs on a level track per ton =

acceleration has very little advantage where stops only average one in 2 miles

Efficiency Indiana Union Traction Co's
56% to Motor - Motor to track 20 Total 42%

20 mile run train wt 300 Tons accelstn ½ mile per hour per sec rate of braking 1.25 Coasting 40 sec Time of stop 30 Sec including lighting + heating 3 months

20 miles hour	100 KW	
30 "	150 "	
40 "	200 "	
50	250	

Use of Rec causes large loss on present trolly - has poor regulation, limited to 2 points full series + full multiple, on these 2 points cars must meet all conditions Motors must be geared to meet maximum speed which makes them very inefficient for slow speeds, or whenever many stops are made, all kinds of devices tried + failed If geared 20 mile h then on accel at a certain rate it takes 25% more power than it

geared to 16 miles per hour motors
may be easily overloaded & burned out
If 4 motors used it can be remedied
somewhat but it complicates and is
seldom used
Violent fluctuations of power stations
require storage batteries

Regenerative braking at 1/2 mile per h per sec
34% recovered if 1 mile per h p sec 29%
Where low speed & infrequent stops
regenerative have little or no advantage
Best way is to accel cut off, coast
& then hand brake, coasting has higher
regenerative than current regen
as the net,

Watt hours at axle per ton mile for a
200 Ton train at schedule speed 30 miles
hour between 1 mile stops

Accel miles per h per sec	watt hours
1.00	117
1.40	57
1.80	50
2.20	47

hence high rate of accelerations is
desirable for low watt at axle it however
may entail an unduly heavy equipment
& other disadvtgs —

Get proceedings of Amer Railway Master Mechanics Assn for past 10 yrs

Try get Hughes Candy for Huy

Frame and equally def in Coal Cost & Cascade as finally per H.P. nat

See Barrett & ask if he wont use card system & keep his Cascade separate acp from Electric

See McChesney Advt for Bailey & Lundin Truck Journals Mag

Wades Book

Lead battery –

1st High rate dischg most potent cause 328
Sulphating + rapid deterioration of electrodes

2 To prevent sulphation from whatever cause
always recharge batty the moment it has
finished dischg + keep it fully charged p 328

3 Overcharging is bad. p 332

4 When battery not in use should be fully
chgd + again charged every 2 weeks
while out of use p 334 –

see p 336

Dyer Dolbear &c

New selling scheme

Buy horse & harness 220
wagon 350
570

Closed like light delivery wagon
Shelves inside - hold 6 or 8 phonos
Records —

Put out 20 Experimental wagons
Cooling of 11,400 - select 20
Not where dealers —
Dealer furnishes phono & man
We furnish wagon, 50% of
profits after Expenses deducted
gross to paying us for the Rig
until paid for, if after Trial 2 months
a dealer fails, Wagon & transferred
to us somewhere else,
10 phono 500 Records,
Possibly 2 or more dealers
or even 10 dealers combine
together & put one man out
then can go over large territory
& be supplied with phono wagons

& if successful they could add
to number wagons
An electric could be made for $1500
provided with 1 Cylinder 1 HP gasoline
& motor to change battery by running
motor on gasoline by using a clutch
Man could get over twice the
territory - but think horse should
be used for the Experiment,

Dyer, about attaching Marsh
on 20000 prospect Lansdale

Review Marsh's letter. don't
read good about to Dyer also
show in Auditorium cabinet,

Think Lansdale should have
another man in N.E.

Talk to Dyer & Bee about
Lansdale man in Boston
2 Chicago St Louis - 1 Phila -
1 Buffalo - & Territory -

Barley Reg 40 A 6
2070 lbs

Anderson 2130 40 A 6

Preliminary Test Anderson Vehicle

2nd Speed (battery parallel)
Wt 2130
315
2445

25 Volts
38 amp
11 miles hour

86.3 watts Carriage mile
with 12960 watts 270 amp 150 miles

Anderson Motor showed work
at 14 miles hour 1/2% grade
at best efficiency per low mile
& slowly rate of battery
& Lower speeds Control by Res
to 1/2% grade 25% more than level.

3rd Speed (Bat parl) 24 Volts
55.7 amp
Speed 13.25

100.7 watts Carriage mile
12960 watts 270 amp 128.7 miles

4th Speed series - 44 Volts
51.4 amp
Speed 16.5 miles hour

137 watts Carriage mile 72 miles
Had V been 48 78.5 miles

Waverly 45 A 4
on level 30 amp

Get Diagram of Connections from Anderson also Bailey

Speak Anderson about speed Button,

Look at a Ford Chassis - see if can put in Motor & Battery & price of chassis without Engine or gas appliances - also Buick, Hyptemobile -

Ask Perkins YPM to send Harvester man over in Re battery for Cutter

See Perkins or YPM yr about proper party go to Southern Ill SB Cars, they using the Gasolene Electric now

Day outing - dd when ready to advertise must have a book of runs etc

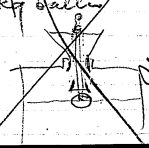
See Bolland about a stand for good motor - to make mile tests on Electrics -

See Tow Leyland getting along on SBat report,

Remove tubes from a grid & put back & press again ask how many times can do it - also strip rings off see if can do and again, also ask if can cut 1/4 inch off tubes & reload for a shorter battery Fred Ott do it - Use an old Long tube that has 6 2x10 mm & cut to use as short tube - using same rings -

Ask Dodge how he succeeded using old E18 Rubber parts go over to Battery -

Dalley make a funnel fill Spitz battery



Martin get Sheet Brass Co

High rate discharge A4 11389 –
charge constant 1 hours 30 amp (stove 95° Fahr.)
Discharges are follows:

Rate dis	End Voltage	amp Hours	average Voltage	watt hours	Temperature	Watt Effy	
30	.90	171	1.215	—	96.4		
30	.90	170	1.207	205	94	56	
30	.90	170.5	1.207	—	89		5
60	.80	163.5	1.105	—	112		
60	.80	168.5	1.120	189	115	51	
60	.80	170.	1.115		113		
90	.70	168	1.04		130		4
90	.70	165.7	1.03		132	47	
90	.70	168	1.03		133		
90	.70	166.5	1.04	173	136		5
120	.60	167	.925		143		
120	.60	168	.925		143	42	
120	.60	165	.927		136		
120	.60	167	.930	155	141		5
150	.50	165	.830		157		
150	.50	162.5	.848	138	154	37	
150	.50	162.5	.832		154		
150	.50	162.5	.850		158		2
180	.40	168	.772	130	167		
180	.40	169.5	.777		170	35	
180	.40	157.5	.757		163		
		90%					

Bailey - wt 2 persons 2385
225 amp 48 V 10800 watt h
80 watts Ton mile 113.2 miles
80 " 285 amp 143.3 miles
100 Watt Ton Mile 90.6 miles
100 285 amp 114.7 miles
MV13 {100 watts 75.1 miles
200 amp {80 watts 92 miles

Anderson Wt 2 persons 2445
225 amp 48 V 10800 watt.
80 watts Ton mile 110.4 miles
80 " 285 amp 140. miles
100 watt ton mile 88.4 miles
100 285 amp 111.9 miles
MV13 200 amp
100 watts 220 lb. 2 Ton 72.7 miles
80 watts. " 90 miles

If 52 Edison put in to make weight same as with MV13
62.4 V 225 amp 14040 watt.
" 285 " 17784 watts

Then the Anderson will go on
100 watt 225 amp 105.4 miles
80 watts 131.7 miles
at 285 amp
100 watts 133.4 miles
80 watts 167 miles

If we take 168 amp for MV 13 as the average capacity over life then Anderson at 100 watts goes 60.9 miles
at 80 watts
+ 75.6 miles at 100 watts

A Dodson 1 horse rig cost
1 year wages $300 board of men
$184 $629.19 in 1908 $729.94 1909

Exider Kyzap Battery, make-makers
recd in N.Y. Edison Monthly
Rib at bottom of jar 1 3/4"
sediment should be cleaned out
when it becomes 1 1/2" high.
If after chg. 50 times cut open cell &
if 1/2" deep then at same rate of
deposit

Select a typical route
for our ability here

Investigate amount of Iron
used in Cells, they order
2500 lbs to ask for 600
Cells – find out how much
they have on hand –

Patent a pavement of Concrete
composed of sand cement
& small stone aggregates of
Trap or Quartzite

Throw neat cement on some
street where traffic is heavy

Lay out a Car with 2 motors
& chain Reg 4 or 6 poles in car
Chain drawn on Gallery shelves
Shelves Heater & cer compressor
& condenser – Rough sketch
then have Scott lay out
car –

Dodge battery test & see
if you can't using more
flake than usual –
getting flatter etc –

find out who makes Reg pole
Chain & then how big
they can make them

Lansdowne Asphalt Course

Bailey Rig 2 persons Wt 2470 lbs

	V	amp	watts	
2nd Notch	52	21	72.6 Tons Mile	
"	52.½	18		
"	52	23		
"	52 ¾	19	Speed	Watts 1000 ft mile
	52.25	20.2	11.8	36.3

With 225 amp at 48 V 120 Miles 285 amp 152 miles

3rd Notch	amp		
50½	31		
51	26	76.6 Watts Ton Mile	
50½	32	at 48 Volts average	
51	24		
		Speed	watts ton mile
50.75	28.25	15	38.3

With 225 amp 113 miles 285 amp 144 miles

4th Speed

V	amp	109.7 Watts Ton Mile	
49.¾	44	at 48 Volts average	
50½	35	Speed	watts per 1000 lbs
50	39.75	15	44.4

With 225 88.5 miles 285 amp 124.3

New List of Automatons from Churchward Lynn 60 V Edison Battery

V	amp	Speed	Volts	amp
1020	85	2000	60	28
1025	"	22	"	32
1026	"	28	1200	40
1022	"	30	800	40
1022	"	40	1200	55
1027	"	60	900	85

Storage Bat Car Special

1022 85 V 30 amp 650 RPM

1022 85 V 40 " 1000 "

These motors will commutate perfectly with a much higher voltage #3 wire 100 cells of battery used

For plating Iron 285 gms $FeCl_2 \cdot 4H_2O$ 102 gms NaCl per liter given 8% Fe & 4% Na 95% efficiency Non Crystalline & good deposit Deposit Iron used Litl Hcl to prevent black scale

Look at Lansden wagon drawings & pick out those for Plane Valve Co.

Ask Martin about Ashe of the Pratt Institute & author of book on Elec RR.

Speak to Hallinan abt Coal cells instead of charger for deschy using down grade long climb time for Greek gloom 50 Kwh so as not disturb Contacts in Motor tube

Get right name for the Lansden Magazine

Dodge cut some more 1/2 area flake - 10 lbs plate

Dodge see how many times tube can be put on a grid

See Lansden & Dyer abt sending out circular like Plate Battery Co

Put up 2 cells with 4 tubes 15 p/o B.O & 1 5 gpm Reg for pocket see how affected by B.

Go over to Chas. Ekard O'Rooker
Bracket RR's Bat Loco Motor
work on Performance of Expect
Here -

Ask Pulse Jacket over
Catalogues RR motors -

Can save 22 c lb on flake of
Iron Can be used -
If drums are made twice dia
at twice as long - Can save
22 Cents more
If can put some Salt in Ni Sol
to diminish Voltage Can
save more - possibly the density
Can be diminished thus lowering
Voltage & might save more
Upon loss of output & Extra
Labor

Draft Gen'l Letter summary
SB Loco to be sent to all
presidts of RRs Elec & Steam

Per Bennett about
Catalogue -

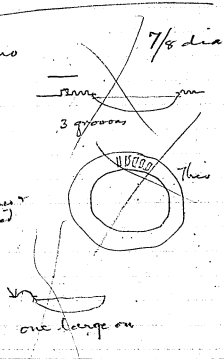
Anderson Vehicle
photo showing weight of
Lead Battery represented
by 7 persons on it,

Pierson Wake & Rawlins
for Dupont -

Bismuth Lead Copper Write
Eng Min Jnl 89 773-4
Bismuth King Mine Sinaloa
Mexico — 2% Bi ore
Smelted to a Lead Matte

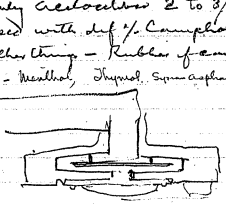
Mix 50% NiO & 50% pass it
& Reduce in H_2 500 of H_2 acid
in Kott.

Thoro

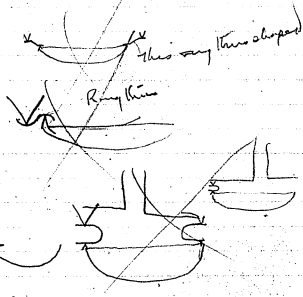


— Smaller ring Larger Center of
— 1½ @ 2/1000 with rivetted Corrugation

Greenly Celluloid 2 to 8/1000
shaped with dif % Camphor
& alcohol thing — Rubber foam get
it in — Menthol, Thymol, Spun asphalt, gutta perch



Double chamber or platte



Wawanuchee - see if they have
guns ammunition & chains

why not run small ads for
Blackman & possibly Orange
in my paper & keep them in

Talking point the reason
E Gulley generally
requires more water
than a Lead Gulley
is that if you cover
~~the~~ change a lead Gulley
very much it hurts it
whereas users know they
can change an Edison
Gulley ~~at wards~~
~~the~~ a upstream up my
corner of Gulley is full
& can't flow no more
Current it decomposes
the water & it goes off
as gas.

This is one of the best features
of E Gulley if ~~it~~ ~~had to be~~
~~water changed or changed~~
~~Lead Gulley there would~~ b
one makes a mistake or
is careless the only harm
done is that they have
put in a little more
water when they fill it

Go over to Bat Co &
pick out 6 Lead
End tubes & run
Current

Dry green with odd Sulphides
in Quick that no dear
dry but just so it will
percolate without from
too fine they dry freeze

Take old long nun tube
Utah Cow & CO &
Scratch brush the holes
to clear Collonds out of
holes, might roll it so
brush works penetrates holes
then put up + Return

Grind $MnSO_4$ & NaOH
together with a little
water then put in cloth
& squeeze all the liquid
possible out of it
dry - percolate + test

Drip use same stuff
press, then wet with little
water, repress to get more
sulfate out, dry, percolate
& test,

Precipitate just enough water
to make a mush press
+ dry + percolate

See what we actually
bill England & Australia
on Records —

Make saturated Sol of
Ni Sulfate Cold and Lump
than 33% NaOH, precip
then press in cloth in
press, dry and percolate
test part & other part
put in bottle water wash
+ Repress

Analogy for flexible truck
take wrap on spring shock
on end Easily broken
but not on flat yet on
Edge its several times
stronger

Starter for elongating
Loco for Battery also
light truck

Talking about frames from Lead Cutting Costs up the nonworks of the Vitrolite — See Precedent letter,

Billy Bee get actual weight of Lead Cutting & Tray 3 say 11 or 13 pounds Epidi,

See Weber a Amberola Repdeus & find out what the matter

Pierman make a very much more delicate knife & spring more long flexibility —

& put adjustment on

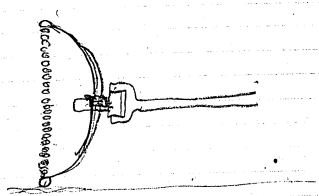
Take up with Weber about his going down to Cornish factory or Cornish coming up & bid on Amberola Cabinets,

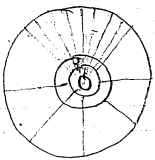
Figure out a plan given by McCherry for paying part of Cost of Cutting on Amberola,

Fred Ott strait seam 1/8 tube
ditto 1/16 - 3/32

Cut off ends long tube so to right to cube on arm & heat in 33% Rott & Glycerin see if all gumes out of tube —

Pierman put a strip of felt def Unknown on high notes part of piano & take records Edison assort



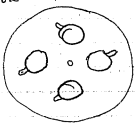


Put Bally add in
Insulls Monthly —
page — also Delands

Dip a ¼ min record into
some of Petrolatum stuff —
See if come out by cold & if
good —

Photo an idundersion Carriage
with top down and 2 men in
Coming 4 men of 150 lbs
& boy 75 lbs all hanging
on — Large size photo.

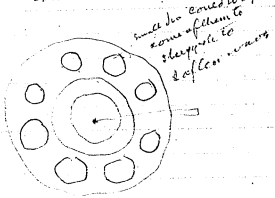
Make Reg rupder copper dia
with 4 celluloid or Mica valves
~~Chamber~~ on dia within Chamber



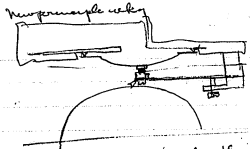
So ball going down in record
they closed — Coming out they
open if spent shapes really
make all variation
may have to have spring held down

also try disc with 4 holes 1/4" dia
thin rubber connected 0.08 to
soften waves. Thin valves too
near head —

Make a recorder 1" ring with extra
orifice 2" chamber of permeable to 1.002
aluminum in to put rubber or other
1/16 diaphragm to soften record



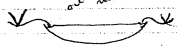
Nonpermeable valve



Gramling makes the aerofoil
film for disc with Camphor &
def drops in —

Hence Pierson try thin rubber 10 to
20 thousand at knife 2 degs
packed on ring disc narrow —
thin spring pressure reduced to
minimum — .002 disc — 1 oth
put 2 or 3 valve holes — Gaulin
wash with sulphur valves too
soften record —

Walke



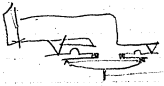
Get Cap disc Auxiliary & one over sharp disc
to put valves on to see if can soften

Why cant we establish record recharge Galiman all the dealers, so one having empties can get from us - ie national filling order book up record of full from some diff. dealers empties ditto jobbers see of scheme this kind practicable

Information Bureau - Cost mean would be good sum to get necessary information & check has the bottle got out of keep & might up to dealer, only pass go in phone & the Supreme Danger.

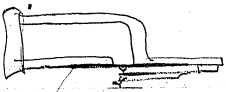
1880 Census 577 Towns 4 ill above 300 people

Balance wheels on phone, needed -

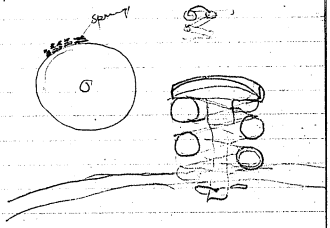


Try

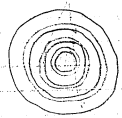
Red Premium



glass bowl flat on flat surface & held flat by springs
glass lens - by celluloid ring fitted pressed flat - ditto fixed
1 3/4 dia



Rings which oil between

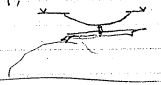


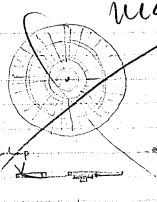
1 5/4 -
Collar Long

good = .002 to Pioneer

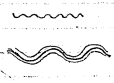
Pioneer

change the Big recorder many details
To double leverage,





made
good



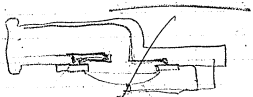
2

all Corrugated together 2 rings + solid
Center Cor on outer Edges
big ring 1/32 outer Edge inst corrugated
32 Corrugations 1" dia Lapse 20/1000

Take up watch Mac Cherry
about Sep Catalogues disc +
Certificates & high & Cars
Catalogues disc only

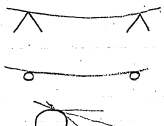
Dyer Smith Turbine
& hot pressure Rotors
have I patented d

tell Brachman Cement works
have received tons float
for concrete road



Rubber dampers each he has

Layout this



Thick ball shape edges bottom as thick deepen down slide

Cathode each 1/8 wide ring 1½/1000 acetic, ~~[illegible]~~ inch + half dia —

Goldstein — precip $Ni(OH)_2$ with $NaOH$, dry to get high loading wet
ditto Nitrate
also precip $NiSO_4$ with $NaOH$, wash by decantation 3/4 to 4/5 of sulfate out + put in supplement of $NaCl$. slow wash + dry for heavy loading wet — ditto KCl — ditto Na Nitrate
Na Acetate, ditto Sulfate ammonia
ditto $CaCl_2$ ammonia, ditto.
$CaCl_2$ Calcium, Sulphate Zinc
$CaCl_2$ Ba, Borax —

Anchor — about small tube gr. being assembled wrong with iron —

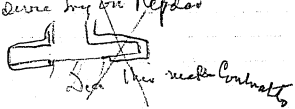
Premium to Exponent on Knife Every angle & Every kind with best 1"
Pinter recorder - also new craft
Lamp with Prof 1" picture recorder

on Big wire try Thimmel glass
+ Knife Edge to under. Written 100%
with picture lines - also wooden
loop all on skin + ring of velvet to
hold against Knife Edge -

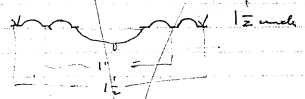
Set up lot of 4½ tubes .005 + .0035
.003 — square + obtuse tubes thin
~~[illegible]~~ thin rings — steel chamfer
thin rings — also 1/8 product
15% B.O.X also best Galdabini
Burnish -

~~[illegible]~~
Bring over a bending machine -
+ make 2 wave coils with 16.5% Boron
Green + Use chamfer + 5% KOH to
form — + use Exactor Li Effleurado.

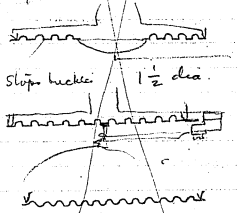
Be Devine try on Regular



Try not only Corrugating but moulding on shape - (Hook Edges by velvet)



(Hook Edges by velvet -



in trying for Big Pillow, dedut have Commercial
hence I blocked my ...
1.5/4 ... .002

See Dodge how he yanked loading mac
more flat plates + instructions moved
lately bad —

find old patent where
rang had 2 windings
& used with Commutator
to raise Voltage up —

Tell Meadowcroft about
old Caveat where O+H made
by Coconut & Zirconia
from acetate, used as
burner — Welsbach —

Jimmy investigate why flakes
gets Copper color with fresh
green in loading & it
it does not with bad
Regs. was lately used —
Have a good green & bad
green analysis for Cop & Cobalt
Jimmy flakes on green
Also blue & clear green

Jimmy Go on Copper bath with Kelly & Cummins Solution and
Wooden Tank Experiment

Goldstein Reg up by Copper
plate to precip 10 lbs at once
with Stirrer & also
deep plate to dry as
can make full pressed
Cells — When this
Regen up make
10 lb Lot Bent Bismuth
Cell 1707 — 100 lb Rain
3883 & 4 9 Chunk —

Drop the 1707 B. group
in Long Cam with
3 4 & 5 gm
Lot Ott Equal Cell —

Look up 21 R 10 BCP —
that Burned Tube
& test 1/8 inch
Tubes for Burning
also a Reg — 1/4 "

See Buchanan about helper
Crow on spring wheel —

Arrange with Dalbear about
Cave in W Va —

Another get RA lowest reg
set up 2 tubes, with
old flakes up to 1423 —
& Run test,
See if Another plunger end
aint worn — Cut open
Or take new RA reg & look
at it under Micros,

Look at some of 15-20%
B, where hydrate mixed
See if any Crystals —

Ask RA if he ever
percolating different,
in last 2 or 3 months
or longer — as to temp
water — or vegetable &
drying of percolated stuff —

and the kind of water used,
(the sort take too much alkali out)

Branch about getting a long
Charge now + then to Car
battery —

Goldschmidt Very good + good reg
green — for alkali with CO_2
taken things —

Note Dodge Tubes + two of
green Coming pkg to RA
Reg bad green and shown by
end tubes

Dchild — higher belt speed
on disc — slip both pulleys
with soft leather cemented
on or riveted on —

Spurrite's test link -

chain. good

~~Precip Cupr SO4 + little carbon monox~~

Saturated $MnSO_4$ + 33% NaOH.
with 1/5 vol + NaOH then deg. Exam
ditto 1/4 — ditto 1/3 ditto
1/2 — boiled 1/2 hour — pressed

Then Conc $MnSO_4$ - 33 NaOH.
Little Glycerin - boil 1/2 hour press
ditto Little KCy —
" ~~Carbonate~~ Soda -

Take the Grain from several old
Tubes, treat glyc & KOH, remove
grain boil & force it from
glycerin & put in 2
Tubes test its Capacity
also

use the flake, on new grain

Ask Hallam: how tests are on old
Fe plates run through H + recoungled

Guldsler test Natural
See water for solids
as against drunk
water — for battery

Ashfield about [illegible] pitted
on Rep Meadows

Precip some MnO_2 ~~of~~
~~take some from pots~~
fresh Sumac on glass
then boil + sumac +
keep it for several
hours, see if under
Mers it change
ditto with glyc
ditto KCy ditto
~~Carb~~ Carbo Na

get weight of 1/8 tube good as compared with 1/4
also tubes to see what full wet cell is —

Holland Wolf not enter Bug Cell tests in small Curve book & then correct from time to time, put full & normal on

Dyer Wood Wilson Elo decide machine Schuft for high speed belt, & Leg Cabinet,

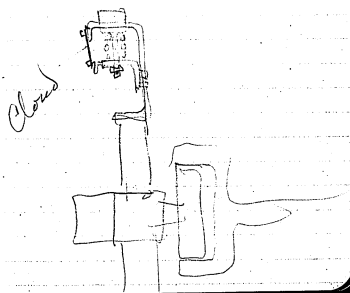
Decide cost shop orders for all kinds machine — number of dies & dies made

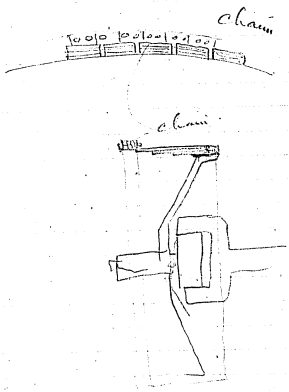
Dolbear get wet & dry Contracts now used

goodwin pushed to find out best delivery wagon people —

Dolbear Wilson Elo to work out plan of contracts & stations for installment

Geldstein test good & bad MnO_2 for a/c —





Find out from McCherry
Principle Carriage
Jobs also when next
Convention want ad
& also exhibit a full
up a family Carriage
Leaflet to get Carriage
Dealer W

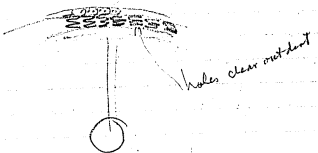
Get Lest Jobbers put on map
& designate those which
are Vic only V+E &
E only—

Send leaflet when ready
showing records lists
also Capt Healey & Co
& Trapp Elg all towards
underwriting forms to
go into Family Finance

Walke try if can walk and
Hammer the 006 Ivory
finish Celluloid—

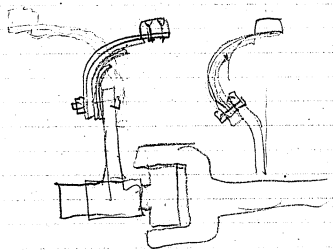
Pierman try reg felm 1½
& acetic up Camphor

chain —



Chain Threaded

Got several Varieties of velvet & plush
& Corduroy — Hahne Newark —



Look over Gel Electrics for similar image
Rabbit, a few times etc —
Dyes, Fertilizers — Ethylene used in Soap
Daily Change the Bag for mail —

Try Lac & Tetra & a very low MP Vehicle
substituted not dissolving Lac or after Cooling
heat to Vaporize the low MP Solvent.

Try Lac Tetra

Schuffel = have screw feed arm on disc cam drop up at end – of 12" for get ahead Costs over advertising last year – printed matter etc

Dyer-Smith patent Velvet ring & also drop for 50½ area flat other non flat – & edge wider than between – also please Velvet, a rubber finger edge on ring – get Copen & stay & apply on Corrugated chen

Dodge see if residue in Benzine that tube washed in –

Archer Drop 2 tube in Benzine Cooling paraffine, & try

Bergman What proportions of poly roll is phenol

Dodge set up 6 long tubes from Dodge with bad ends & 6 good ends same batch of fl & MOH mix together

Write Bergman for a letter to Geo Ehert

Patent Disc records name on ~~Edge~~ outer rim & slits to show in so each record name seen also names of both turns on both sides, one colored to show name on that side –

Patent the ways for stop hunting diamond mine & Schuffel

Schuffel patent the Separator
paper felon for [illegible]

Get model of Horn 60,
Disc right away

Arrange drawers in
Auchenbach to take
both disc & Cylinder

Run the 2 disc Motors
15 day night & day
to determine wear

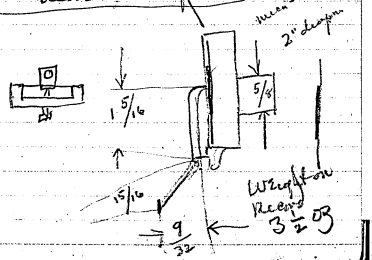
JWA, Same wood pulp made
out but in minor Glasses
Extra provided –

JWA try Victor disc material
on press & try diamond for
wear –

1890 – N.Y. 753 Towns –
pop 1 444 000 State
NC 866 Towns 1 618 000 –

See Hathaway, about making
this winter before see him get
statement given Hornemann Rep
of National,

Victor – How would it do
to draw gum back .6 ft
back relative to 1 ½ ft disc
so it takes on coal drop
remove 2nd at Kiln –



Sell Borroughs stock,
get Coffin on telephone top of the wall
for there ought over to sell downtown at
Cost if take it for keys

Holland Clay Ricard Cotton
from Lebanon Ohio
Blue Stripe Bulby

E E Kimball Elec Engr
Gent Elec Co
Keeps sent here over

Dyer about enlarging
Piano Salesman Hopkins Co
ditto Clerks who would
get out in air for
wagon
better Singer Sewing
Machine agts
they ought to have
experience

Eat copper 6 oz 10 gram Cu 1 gram Fe
+ 32 gram H2O2 20 Drums
this work wants air —

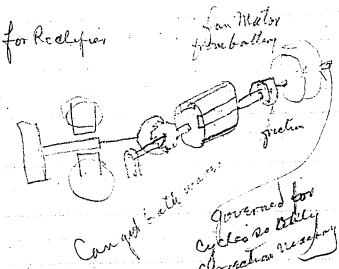
Have Archie put up
some board screen with
new tubes holes more
open — ditto with rings
more loose — ditto not
squeeze ends or clinchers
like mix at all.

See Dyer about having
Scott to visit all reps
Eng Sales in 12 wagons
+ say dwr should have
more men than Scott
over gang poor stuff
waste money.

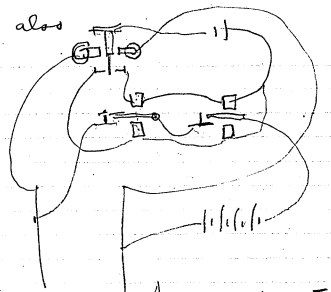
Buchman Wales
2 Rolls 3" dia 5 long
Rubber mixing roll
steam heated, discs heated
for mixing dope for
Exptls records

Squirt jet thru die shapes
of records.

for Reliefs



also



Sounders 4 or 5
Large Comb contacts

See Monell & have his directions
Just battery by influence ~

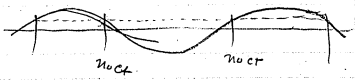
See H W Perkins Co
Mac Steel Co & get what
users now put Ovonic

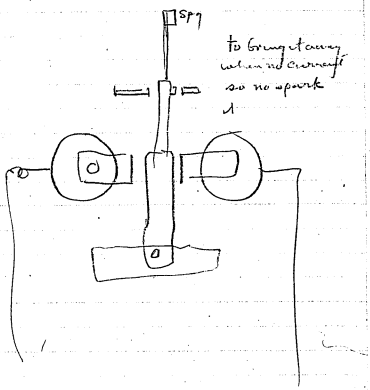
Dyer - How about establishing branch
Pathé Film Co in Europe,
Australia etc —

Try asbestos shellac in
Montan - to harden or lengthen
if not harden enough try
boiled white 3c asbestos fibre
with the wax - as much as will
still make it thin enough
To Spin - to use round balls
+ 2 oz cut on Reg 7½"

Try get Phila washing
Balls, Pittsburgh + other
Central station very found
Electric + make lockers +
~~boys~~ peddlers leave
over along belts or
truck —

Tell Motorman





Genl Vehicle Battery Lines

Selling price of wagon	2200	2650	3400	4000	4500	
Current in amp on level asphalt	22	26	34	42	50	
Discharge rate for 6 hours of flooding Not	22	26	34	42	50	
Number plates per Cell	11	13	17	21	25	
capacity of battery in KW H-hours	11	13	17	21	25	
approx weight	1100	1300	1700	2100	2500	
Cost battery 30 per plate	330	390	510	630	750	
Cost renewals of plates & separators 17 per plate	187	221	289	357	425	
Amp charge rate 3/4 of discharge rate	16	20	26	32	38	
Speed wagon level asphalt average for day	12	11	10	9	8	
Miles on charging running continuously level asphalt	72	66	60	54	48	
Charge for cleaning all above Not	35	38	42	45	50	
Jan	1,95	210	235	265	300	30% off
amp hour cap on basis of 6 hour rate	135	162	216	217	324	
amp hour current necessary for full charge at 10 hour rate	162	194	260	324	389	

Shipments Bottling			To exp.
Jany	2403	80	$880
Feby	2242	80	880
March	1787	58	638
april	3840	128	1408
May	4218	140	1540
June	4154	138	1518
July 23rd	3572	179 23 day	1969
July			

Return Records + shipments
Jany Shipped 230834
(Returned) 57571
24% of shipments

May 1910

Commissions	268.
Sales ofs Exp	9734
Advts	3900
Genl Office Exp	2165
	$16067

Cash discounts Banks etc	1700
Customers dis for cash	631
	2331

Total $18398 monthly

140 M sales 13.1 Cts fixd chgs

This equal 5% on 400 doz cases bottling co by

Comical Trucks

	No. models	Prototypes		No. models	Pickups
1900			1907	70	6
1901	4		1908	48	6
1902	6	2	1909	74	22
1903	62	3	1910	51	14
1904	38	6			
1905	68	5			
1906	63	3			

	No.	No.		
Vehicle Equip Co	40	210	Chemical Equipment	4
Gene V Co	30	208	Gibbs Equip Mfg Co	4
Elec V Co	7	117	Magnetic Auto Co	3
Lozier	15	104	Quinn Equipment Motor Co	1
Ricker	3	36	Hagerty	1
Studebaker		29	PR Peckham	1
Woods	1	16	Jack Hauck Co	1
Coupe Gear	1	11	Davy Motor V Co	1
Reamer		12	Canton Elec Co	1
Auto Cart Co		5	Pittsburg Motor V Co	1
American Bicycle Co		1	Trenton Auto Co	1
Comical Truck Co	2			
Coleman	1	3	Fischer	1

Distance between stops

Max hours for wheelchairs & pedestrians

Approx. travel rate/mph

Single Gear drive

Miles	Feet	40 Miles/hour	35 Miles/hour	30 Miles/hour	25 Miles/hour	20 Miles/hour	15 Miles/hour
3 1/4	15840	110	80	78	69	53	40
2 1/2	13200	121	83	83	74	54	40
2	10560	142	90	86	80	60	41
1 1/2	7920	99	99	95	85	68	43
1	5280	123	123	128	90	74	56
1/2	2640				145	119	56
1/4	1320						120
				15 Sec 5 mph 2/15	15 Sec 5 mph 3/15	15 Sec 5 mph 10/15	

Transmission pulling 150 lbs/ton

Braking retardation 30 20 20 15

at 40 miles scheduled speed allowed will be 60 to 65 miles hours, includes 2½ miles hours

maximum speed up to 50 miles hour

Acceleration for the heavy vehicle varies from 75 to 110 lbs

pull hill grades or higher or 210 lbs for short runs

actual for simple cars not figure than 1 can used the friction transmission pull from wide demands

Above figures are for Energy at Motors

June 15 Test -
Lansdens Asphalt road
mean of both ways -
Both Machine Palmer tires

Anderson Wt 2460 -

2nd Speed	12 miles	60	Watts Torque	148.6 miles
3rd "	14	70	"	
4th "	20	86	"	
5th "	24	100	"	

Bailey Wt 2350

2nd Speed	12 miles	62.6	Watts Torque
3rd "	14	80	"
4th "	18	86	

Anderson Model A Run about
Weight body complete no Gallery
1378 lot 40 A 6 - at 20.38 -
813 lbs Total lot 2191 lbs -
$1900. Lead $600 more Edison

478 is long endurance cell
of the Curve -

Can divert $9000 from phone
to Bailey in 3 months for a day

Gene Elec Computer
C B Keese.

199000 bonds + equity in hand
~~32000 at Jersey railway~~ which [illegible]
97 Mind bonds
12500 Mind bonds
132000 sell batteries on hand
437500
[illegible]
425000 required on next page.

Bonds

Evsle King
Mutual Benefit Bldg
Broad & Clinton, Newark

Byrne & McDonnell
776 Broad St
Newark

See Perry in NY some bond man
there -

Mallory May		28 000
June	Battery loss	4 000
"	Sales dept cost	4 000
	Bond int'st batty	1 000
	Lansden	4 000
	Mallory	6 000
	Adv'tg Batty & Lansden	5 000
	Lab	5 000
		20 000
July Mallory		
	Battery Loss	4 000
	Sales dept "	4 000
	Lansden	2 000
	Laboratory	5 000
	Bat Adv'tg & Lansden	5 000
		40 000
	Rudnowsky Schumann Nab	5 000
		45 000
August Mallory		15 000
	Battery Loss	5 000
	" Sales dept	4 000
	Bat & Lansden Adv't	5 000
	Lab	5 000
	Lansden	4 000
		41 000
	Rudnowsky Schumann Nab	5 000

Sept Mallory		15 000
	Battery & Sales loss	9 000
	Adv'tg Bat & Lansden	7 000
	Lab	5 000
	Lansden	3 000
		39 000
Oct Mallory		15 000
	Battery & Sales loss	9 000
	Lab	5 000
	Lansden	2 000
	Coupons 9000	
		46 000
Nov Mallory		10 000
	Lab	5 000
	Lansden	2 000
		17 000
Dec Mallory		
80 M bbls stocked out		
65c cost		50 000
	Lab	5 000 55000
Jany Mallory		10 000
	bond int & bally	14 800
	Lab	5 000 19800
Feby 100 M		65 000
	Lab	5 000 70 000
Mch 40 M		26 000
	Lab	5 000 31 000

10 000	2	4 mm
Wax 12c	174.00	174 00
Cardboard (labelled)	99 25	112.55
Sundries	12 00	12 00
Talent	181 09	181 09
Labor	165 50	165 50
6.3c		6.45c
Jet	45 00	45 00
Pkg + Boxing	51 00	51.00
Advtg	122 75	122 75
Genl Exp	152 00	152 00
	1002 59	1015 89
3.7c	Equals 10.3 Cents	10 19/100 Cents
Net selling price	15.2	Net Selling price 19 cents

24% Records shipped foreign
16% Phones
26% Films

Convers D. Marsh
15 Spruce St
New York

54 Exclusive Victor Jobbers

Records (labelled) Eng Australia
24 H mm 8 1/4

B Gem	4.20	D Standard	8 50
B Standard	7 00	D Forsid (shown with Egypt)	8.55
D Gem	5 00	D Standard	" 10 25
D Trad	6 50	B "	" 8 75

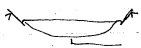
July 6th on hand in bonds
$96 000 - left in bonds July 6 —
64 000 paid Vol taken out this day to pay July bills
32 000 in deposit with Fidelity for Insurance on Works bonds

Mina M Edison

Monhegan — Maine

33
220
66
66
72

128

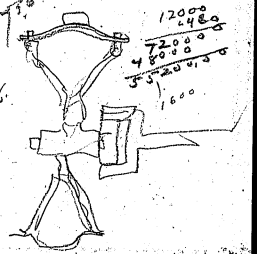


92 000 bonds
32 000 Insurance
20 000 Mont Lake
10 --- Life Ins
75 000 Mina
7 000 Boroughs
80 000 Letters

296
128
168
90
78
7

EP Earle

140000

Sat June 25 - Bellwood park

Edw H. Kocher